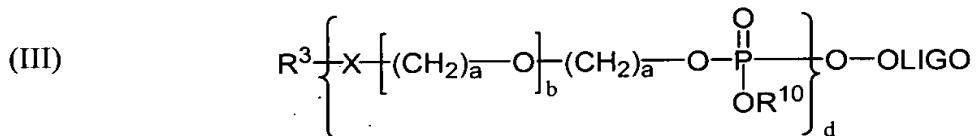
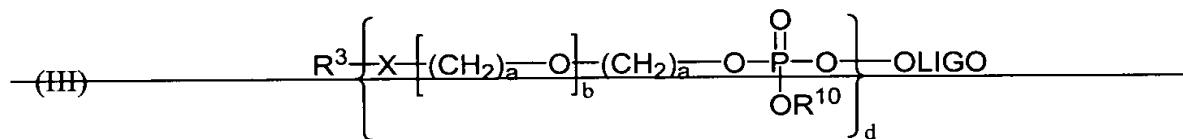
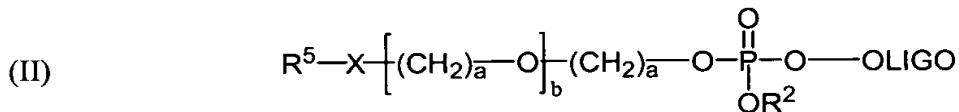


IN THE CLAIMS:

Please cancel claims 29-52 as drawn to non-elected inventions without prejudice to Applicants' right to pursue the subject matter of the canceled claims in one or more divisional and/or continuation applications.

Please rewrite the pending claims as follows:

1. (Currently amended) A mobility-modified sequence-specific nucleobase polymer comprising a mobility-modifying polymer linked to a sequence-specific nucleobase polymer, according to Structural formula (II) or (III):

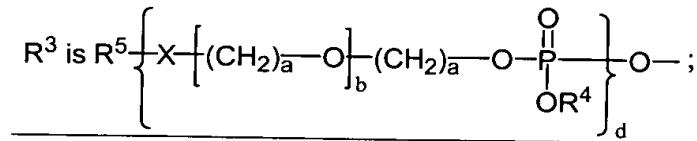
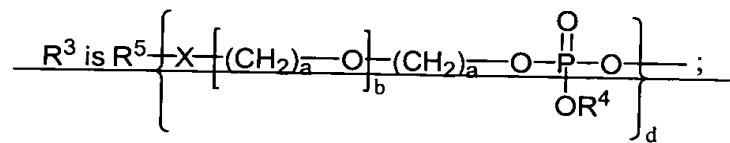


or a salt thereof, wherein:

R^2 is selected from the group consisting of alkyl comprising at least two carbon atoms, aryl, $(\text{R}^8)_3\text{Si}-$ where each R^8 is independently selected from the group consisting of linear and branched chain alkyl and aryl, base-stable protecting groups, and $\text{R}^5-\text{X}-[(\text{CH}_2)_a-\text{O}]_b-(\text{CH}_2)_a-$;

each R^{10} is independently selected from the group consisting of hydrogen and R^2 ;

R^5 is selected from the group consisting of hydrogen, protecting group, reporter molecule, and ligand;



each R^4 is independently selected from the group consisting of hydrogen and R^2 ;

each X is independently selected from the group consisting of O, S, NH and $NH-C(O)$;

each a is independently an integer from 1 to 6;

each b is independently an integer from 0 to 40;

each d is independently an integer from 1 to 200; and

OLIGO is comprises a sequence-specific nucleobase polymer,

with the proviso that at least one R^{10} or at least one R^4 is other than hydrogen, wherein

the mobility-modifying polymer comprises at least one phosphotriester linkage.

2. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 1 in which each X is O.

3. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 1 in which each a is 2.

4. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 3 in which each b is 4.

5. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 1 in which OLIGO is comprises a DNA, RNA, DNA analog, or RNA analog oligonucleotide.

6. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 1 in which OLIGO is comprises an analog of a DNA or RNA oligonucleotide.

7. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 1 in which OLIGO comprises at least one non-negatively charged internucleotide linkage.

8. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 7, wherein said internucleotide linkage is a mono alkyl phosphate triester.

9. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 1 in which R⁵ is a reporter molecule.

10. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 9 in which the reporter molecule is a fluorophore, a chemiluminescent moiety, or a ligand.

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cont.

11. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 1 in which OLIGO includes a detectable label.

12. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 9 in which the detectable label is a fluorophore.

13. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 1 in which OLIGO comprises a polyethlyene oxide polymer.

14. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 13, wherein the polyethlyene oxide polymer is a mono methyl polyethlyene oxide polymer.

15. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 13, wherein the polyethlyene oxide polymer has a molecular weight of at least 2000 daltons.

16. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 13, wherein the polyethlyene oxide polymer has a molecular weight of at least 5000 daltons.

17. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 1, wherein the mobility-modifying polymer is attached to the 5'-end of the sequence-specific nucleobase polymer.

18. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 17, further comprising a polyethlyene oxide polymer attached to the 3'-end of the sequence-specific nucleobase polymer.

19. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 18, wherein the polyethlyene oxide polymer is a mono methyl polyethlyene oxide polymer.

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CDOT

20. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 18, wherein the polyethlyene oxide polymer has a molecular weight of at least 2000 daltons.

21. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 18, wherein the polyethlyene oxide polymer has a molecular weight of at least 5000 daltons.

22. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 1, wherein the mobility-modifying polymer is attached to the 3'-end of the sequence-specific nucleobase polymer.

23. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 22, further comprising a polyethlyene oxide polymer attached to the 5'-end of the sequence-specific nucleobase polymer.

24. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 22, wherein the polyethlyene oxide polymer is a mono methyl polyethlyene oxide polymer.

25. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 22, wherein the polyethlyene oxide polymer has a molecular weight of at least 2000 daltons.

26. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 22, wherein the polyethlyene oxide polymer has a molecular weight of at least 5000 daltons.

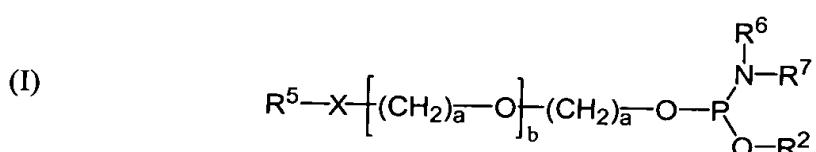
27. (Currently amended) A composition comprising a plurality of mixture of different mobility-modified sequence-specific nucleobase polymers, wherein each said nucleobase polymer is a compound according to in accordance with Claim 1, and wherein each said different nucleobase polymer has a distinctive ratio of charge to translational frictional drag relative to the frictional drags of the other different nucleobase polymers.

*Alt
cont.*

28. (Currently amended) The composition of Claim 27, wherein said each mobility modified sequence specific nucleobase polymer of said plurality comprises an OLIGO, and wherein each OLIGO in each different mobility-modified sequence-specific nucleobase polymer has the same number of nucleobase units.

Claims 29-52 are canceled without prejudice.

53. (Original) A mobility-modifying phosphoramidite reagent having the structure:



wherein:

R^2 is selected from the group consisting of alkyl comprising at least two carbon atoms, aryl, $(R^8)_3Si-$ where each R^8 is independently selected from the group consisting of

linear and branched chain alkyl and aryl, base-stable protecting groups, and $R^5-X-[(CH_2)_a-O]_b-(CH_2)_a-$;

R^5 is selected from the group consisting of hydrogen, protecting group, reporter molecule, and ligand;

R^6 and R^7 are each independently selected from the group consisting of $C_1 - C_6$ alkyl, $C_3 - C_{10}$ cycloalkyl, $C_6 - C_{20}$ aryl, and $C_{20} - C_{27}$ arylalkyl;

X is selected from the group consisting of O, S, NH, NH-C(O);

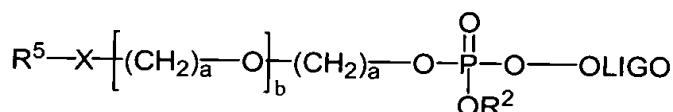
each a is independently an integer from 1 to 6; and

b is an integer from 0 to 40.

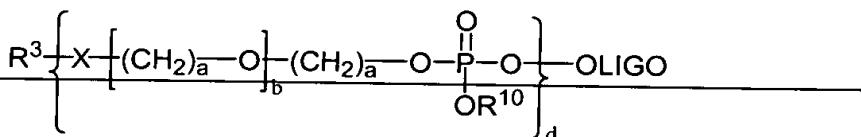
54. (Currently amended) A kit for use in nucleotide-sequence dependent assays, the kit comprising at least one mobility-modified sequence specific nucleobase polymer, wherein the mobility-modified sequence specific nucleobase polymer comprises a mobility-modifying polymer linked to a sequence-specific nucleobase polymer, according to structural formula (II) or (III):

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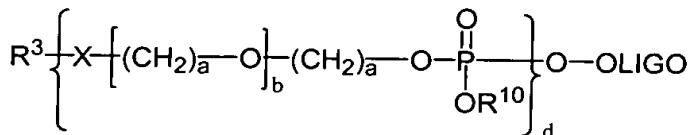
(II)



(III)



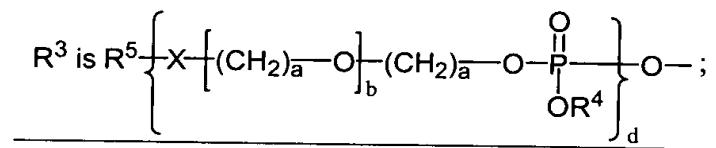
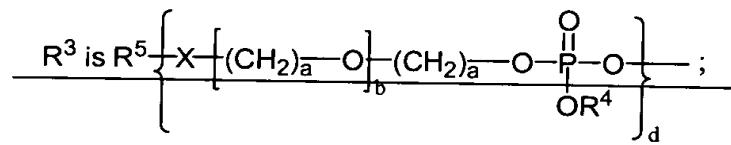
(III)



or a salt thereof, wherein:

R^2 is selected from the group consisting of alkyl comprising at least two carbon atoms, aryl, $(R^8)_3Si-$ where each R^8 is independently selected from the group consisting of linear and branched chain alkyl and aryl, base-stable protecting groups, and $R^5-X-[(CH_2)_a-O]_b-(CH_2)_a-$;

R^5 is selected from the group consisting of hydrogen, protecting group, reporter molecule, and ligand;



R^{10} is independently selected from the group consisting of hydrogen and R^2 ;
 R^4 is independently selected from the group consisting of hydrogen and R^2 ;
 X is independently selected from the group consisting of O, S, NH and NH-C(O);

each a is independently an integer from 1 to 6;

each b is independently an integer from 0 to 40;

each d is independently an integer from 1 to 200; and

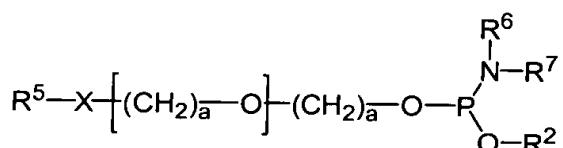
OLIGO is comprises a sequence-specific nucleobase polymer,

with the proviso that if at least one R^{10} or at least one R^4 is not hydrogen; and

at least one reagent selected from the group consisting of a restriction enzyme, a DNA polymerase, an RNAase, a mismatch binding protein, a ligase, an exonuclease, a nucleoside triphosphate, a chain terminating nucleotide, a reaction buffer, and combinations thereof.

55. (Currently amended) A kit for use in the synthesis of mobility-modified sequence specific nucleobase polymers, the kit comprising at least one mobility-modifying phosphoramidite reagent, wherein said reagent has a structure according to:

(I)



wherein:

R^5 is selected from the group consisting of hydrogen, protecting group, reporter molecule, and ligand;

R^6 and R^7 are each independently selected from the group consisting of $C_1 - C_6$ alkyl, $C_3 - C_{10}$ cycloalkyl, $C_6 - C_{20}$ aryl, and $C_{20} - C_{27}$ arylalkyl;

X is selected from the group consisting of O, S, NH, NH-C(O);

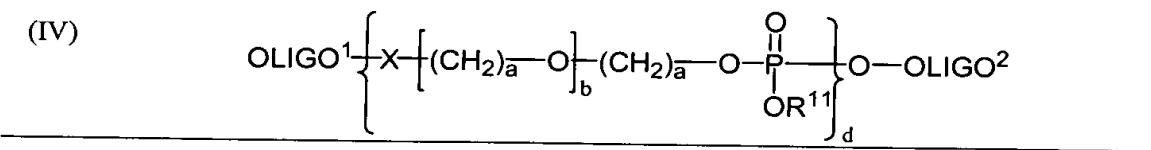
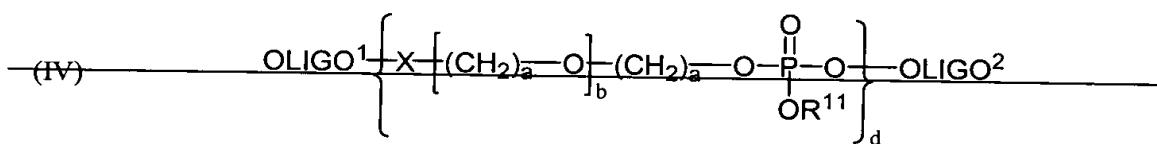
a is an integer from 1 to 6;

R^2 is selected from the group consisting of alkyl comprising at least two carbon atoms, aryl, $(R^8)_3Si-$ where each R^8 is independently selected from the group consisting of linear and branched chain alkyl and aryl, base-stable protecting groups, and $R^5-X-[(CH_2)_a-O]_b-(CH_2)_a-$ and

b is an integer from 0 to 40; and

at least one compound selected from the group consisting of protecting group, reporter molecule, ligand, solvent, reagent and combinations thereof.

Alt 1
Alt 2
56. (Currently amended) A mobility-modified sequence-specific nucleobase polymer comprising a mobility-modifying polymer linked to the 3'-end of a first sequence-specific nucleobase polymer and to the 5'-end of a second sequence-specific nucleobase polymer according to Structural formula (IV):



or a salt thereof, wherein:

each R^{11} is independently selected from the group consisting of hydrogen, alkyl comprising at least two carbon atoms, aryl, $(R^8)_3Si-$ where each R^8 is independently selected from the group consisting of linear and branched chain alkyl and aryl, base-stable protecting

groups, $R^5-X-[CH_2]_a-O]_b-(CH_2)_a-$, protecting group, reporter molecule, and ligand, with the proviso that at least one R^{11} is not hydrogen;

each **X** is independently selected from the group consisting of O, S, NH and NH-C(O);

each **a** is independently an integer from 1 to 6;

each **b** is independently an integer from 0 to 40;

d is an integer from 1 to 200;

OLIGO¹ is comprises a first sequence-specific nucleobase polymer; and

OLIGO² is comprises a second sequence-specific nucleobase polymer.

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57. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 56 in which at least one of OLIGO¹ and OLIGO² comprises a polyethlyene oxide polymer.

58. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 57, wherein the polyethlyene oxide polymer is a mono methyl polyethlyene oxide polymer.

59. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 57, wherein the polyethlyene oxide polymer has a molecular weight of at least 2000 daltons.

60. (Original) The mobility-modified sequence-specific nucleobase polymer of Claim 57, wherein the polyethlyene oxide polymer has a molecular weight of at least 5000 daltons.
